

Insect Photography

Chris Grinter



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ACADEMY OF
SCIENCES

Overview

- Dead things
 - Gear, specimen prep, focus stacking
- Live things
 - Gear, composition, etc.
- Post Processing



Pinned Specimens

- Often require focus-stacking, or bringing the specimen far enough off of the backdrop to give a balanced out-of-focus background.

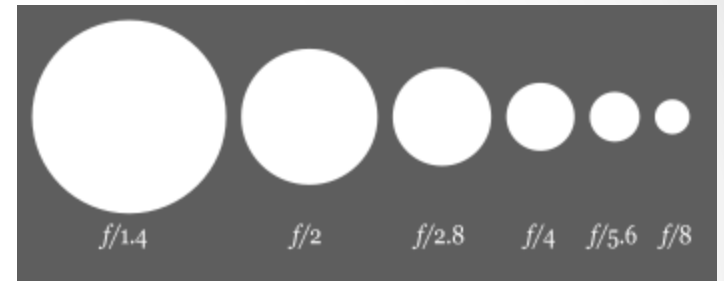


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1/200 f/10 ISO100 MPE 65mm, 75 shots stacked in Helicon

Photography

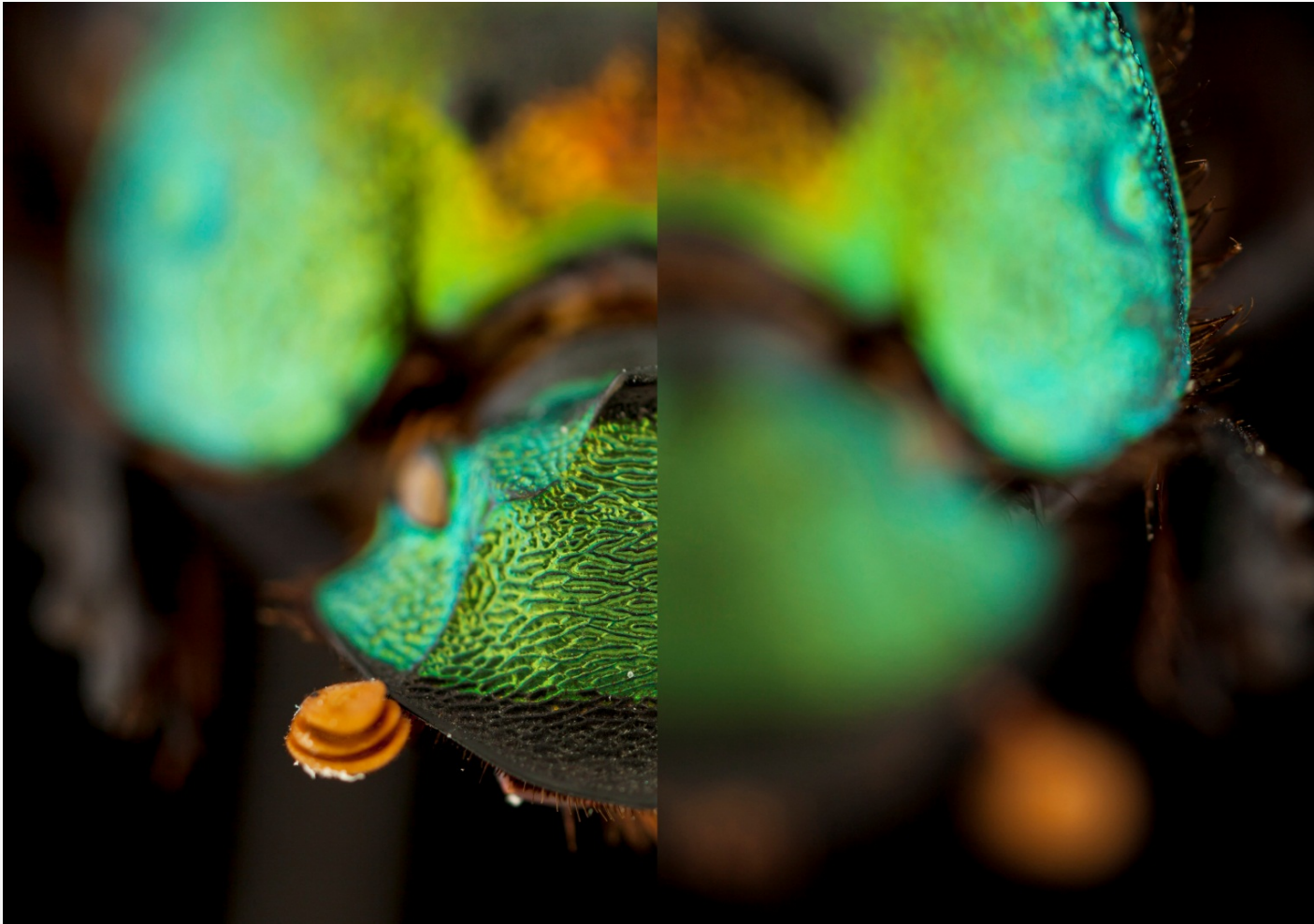
- About aperture
 - Large aperture = small number
 - The larger the f -stop the more light reaches the sensor, but with decreasing depth of field
- The narrow focus coupled with lots of light means you reach maximum resolution at the greatest apertures and shallowest depth of field



And this creates a problem... at higher resolutions only a tiny portion of the insect will be in focus!

Photography

- Maintaining sharpness means super-shallow DOF



f/4.0 ISO100 1/200 sec

Photography

- 63 images later...



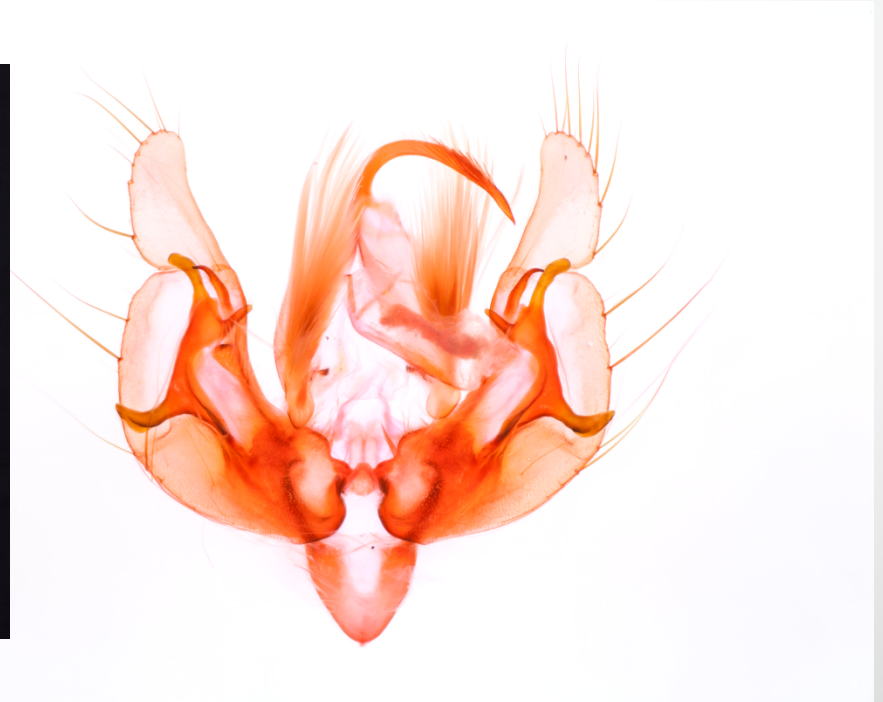
f/4.0 ISO100 1/200 sec

Focus Stacking

- Combining multiple images with sharp focus and narrow aperture into one image in perfect focus.
- Lots of software options for processing these Z-stacks
 - Helicon Focus - \$115/\$200/\$240
 - Zerene Stacker \$39/\$89/\$189/\$289 (personal favorite)
 - Combine ZP – FREE!
 - Photoshop \$642
 - Syncroscopy & Auto-Montage \$\$\$\$
- Hardware can be a bit tricky...

Hardware

- Depending on your requirements, you may need more or less gear.
- Leps are fairly 2-dimensional and you can easily get away without complicated stacks
 - But for genitalia – it's a really nice option



Hardware

- Setups can get complicated. Here is a small “Passport II” by Visionary Digital (~\$20,000)



Hardware

- Or very complicated and be in the ~\$50-90,000 range.



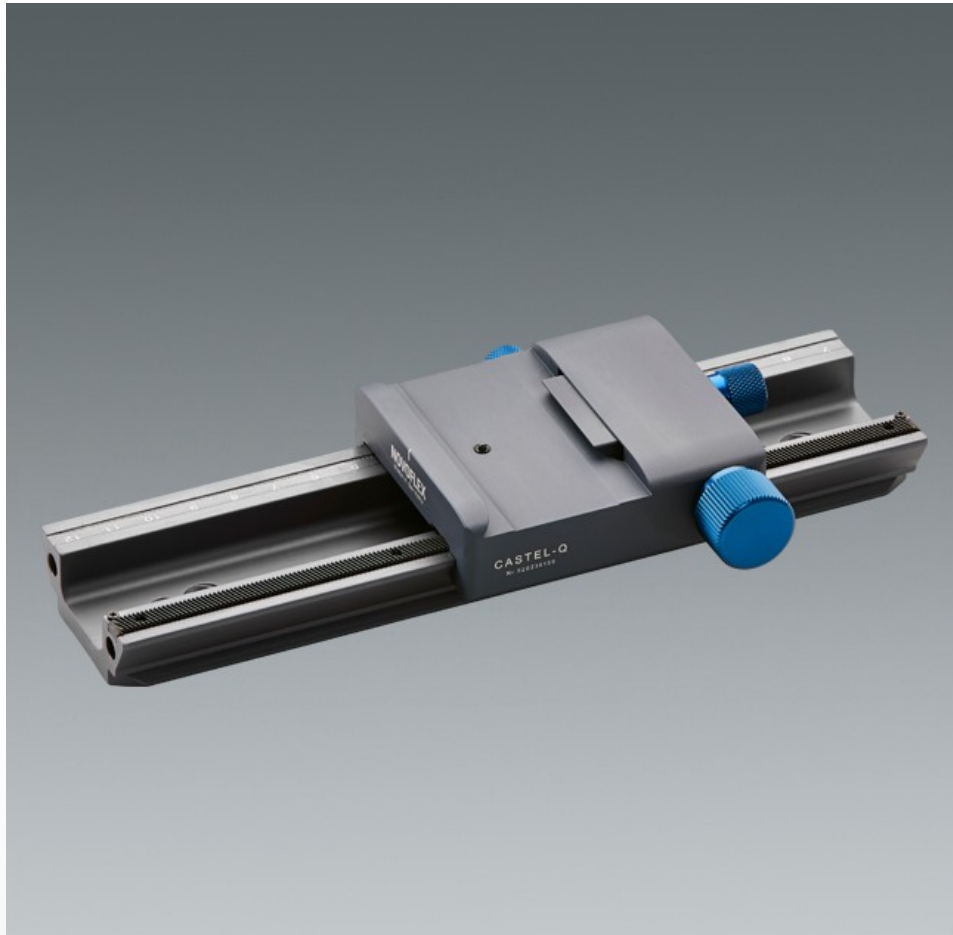
Hardware

- The basics include a camera mounted on a rail system that physically moves the camera between each shot. (\$600)



Hardware

- Or the non-electronic version for \$200



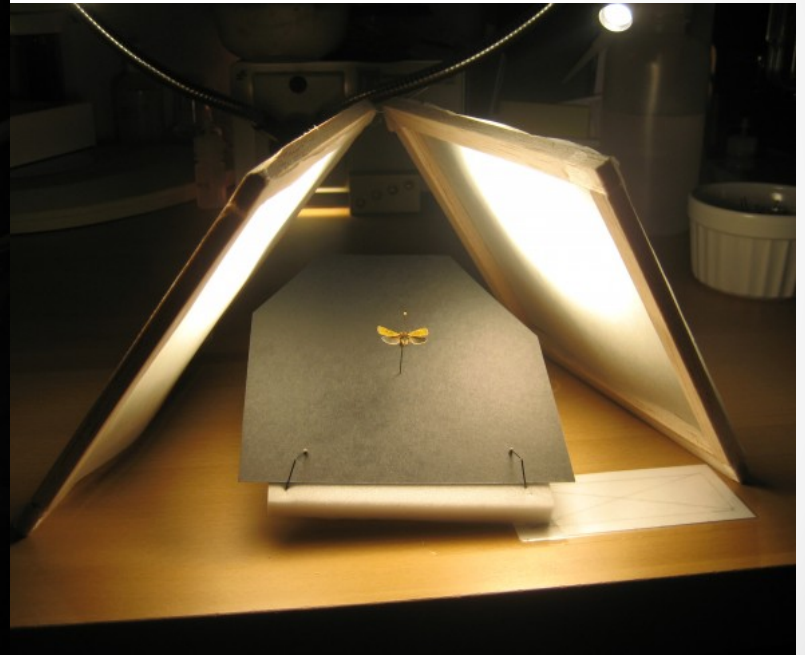
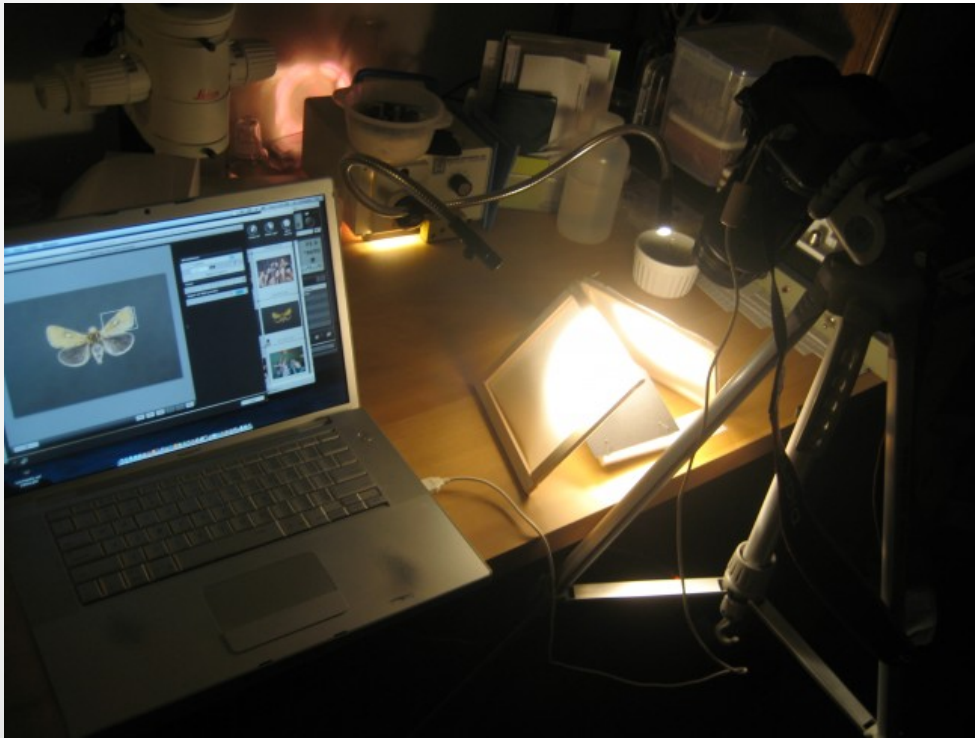
Hardware

- Mounted on a photo-copy stand (~\$100 on eBay, or CHEAP from a garage sale/2nd hand store)



Hardware

- Basic photos can be taken with a DSLR on a tripod with steady lighting, but flash is preferable.
 - Canon 40D with 100mm macro lens (live view through computer comes free with all Canon DSLRs)



Photography

- = A shot that looks like it took a lot more effort



Setting up the Shot

- Soft lighting is critical and Styrofoam is your best friend
- You can cheat a narrow aperture by pulling the specimen far off the backdrop or by adjusting the focus of your lens manually.



Setting up the Shot

- Adding height to the specimen or placing over glass is the best way to cheat the aperture. This way you can shoot at f/11-16 and still have a blurred background
 - Wax or clay are perfect!



Setting up the Shot

- Diffuse light is critical and Styrofoam is one of the best things to use.



1/200 f/11, ISO 100, MP-E65mm at 1x

Live Animals in the Studio

- Soft-box for white backgrounds



Live Animals in the Studio

- Over glass/black background for dramatic effects



© Chris Grinter 2013

Live Animals in the Studio

- Over glass/black background for dramatic effects



© Chris Grinter 2013

Live Animals in the Studio

- Rock or other natural material for a fake outdoors look.



Focus Stacking Live Animals

- If you are only taking a few shots you can adjust the focus manually, or physically move the camera carefully in or out. Handheld stacks are possible (if your subject is perfectly motionless)

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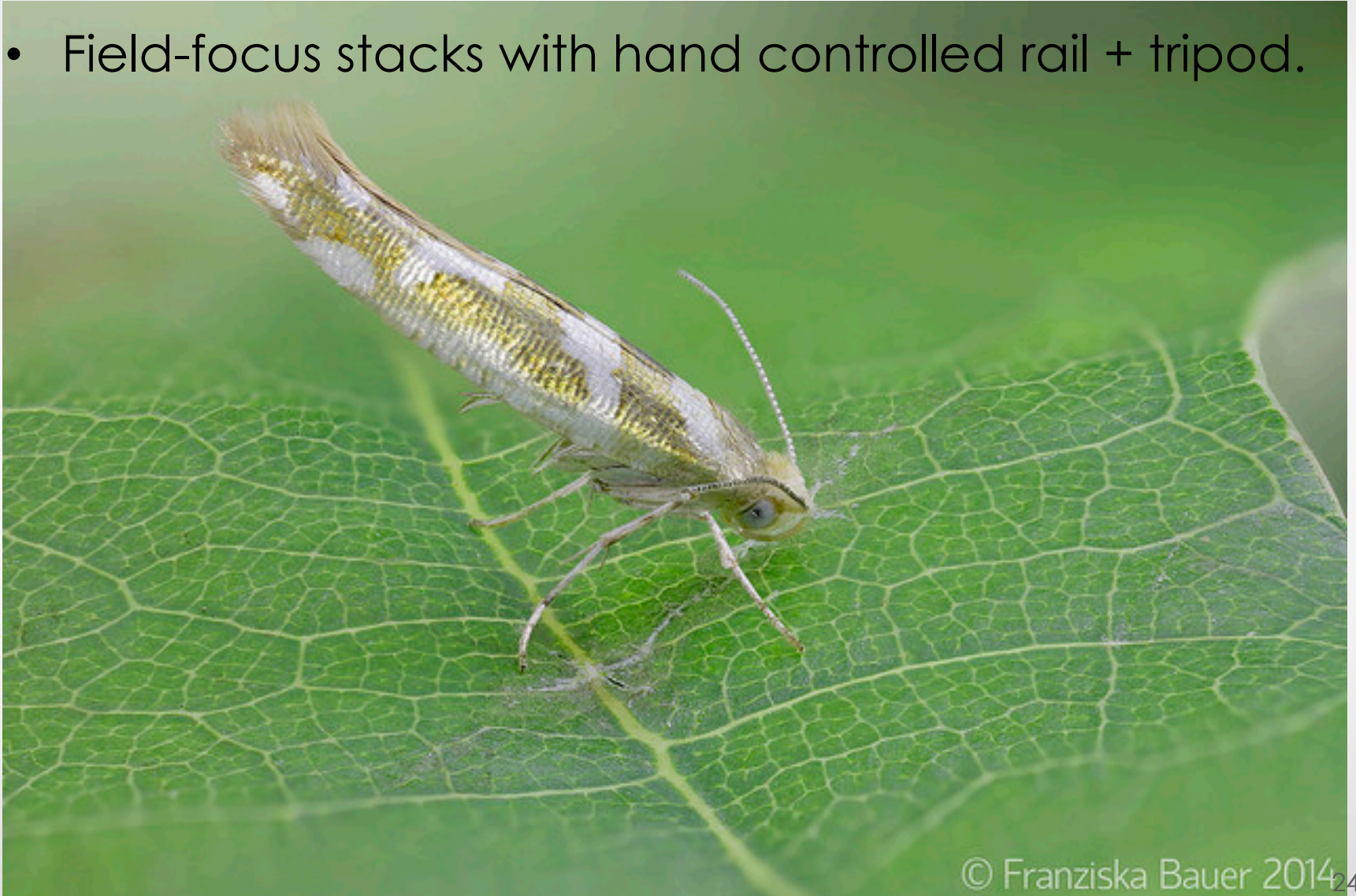


A bark louse (Psocoptera) from Mozambique [Canon 7D, Canon MP-E 65mm, 3 speedlights Canon

- 580EXII; 12 images, taken at f10; combined in Helicon Focus

Focus Stacking Live Animals

- Field-focus stacks with hand controlled rail + tripod.





© Franziska Bauer 2015

Live Animals in the Field

- Getting down to the level of the insect is important



Gear for Live Animals

- DSLR + Macro lens of some style. 100mm is perfect for butterflies/moths and is sharp enough for beautiful images. 200mm+ or non-prime don't usually generate the same quality macro shots
- MP-E65mm 1-5x is the ideal lens for any serious insect photographer. Beautifully sharp and capable of 5x magnification without bellows.
- Flash and flash-diffusion are critical for the MP-E65
 - Large array of options for diffusion, some combination of foam/Styrofoam/packing materials provide the best diffuse light.
 - Tons of blogs/photos/posts about making the best diffusers.

Gear for Live Animals

- Canon MP-E 65mm 1-5x



Alex Wild

Gear for Live Animals

- Diffusion of the Canon MT-24EX Twin Flash



Live Animals in the Field

- Composition is critical



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Post-Processing

- Workflow

- Photos auto-import into Lightroom 4, where I adjust exposure, add a few clicks of “Clarity”, bring up or down the shadows and sometimes adjust the highlights.
- If you’re stacking you can synchronize photos in Lightroom and export them all as 16bit TIFF files to be stacked (resulting in a huge photo ~100MB)

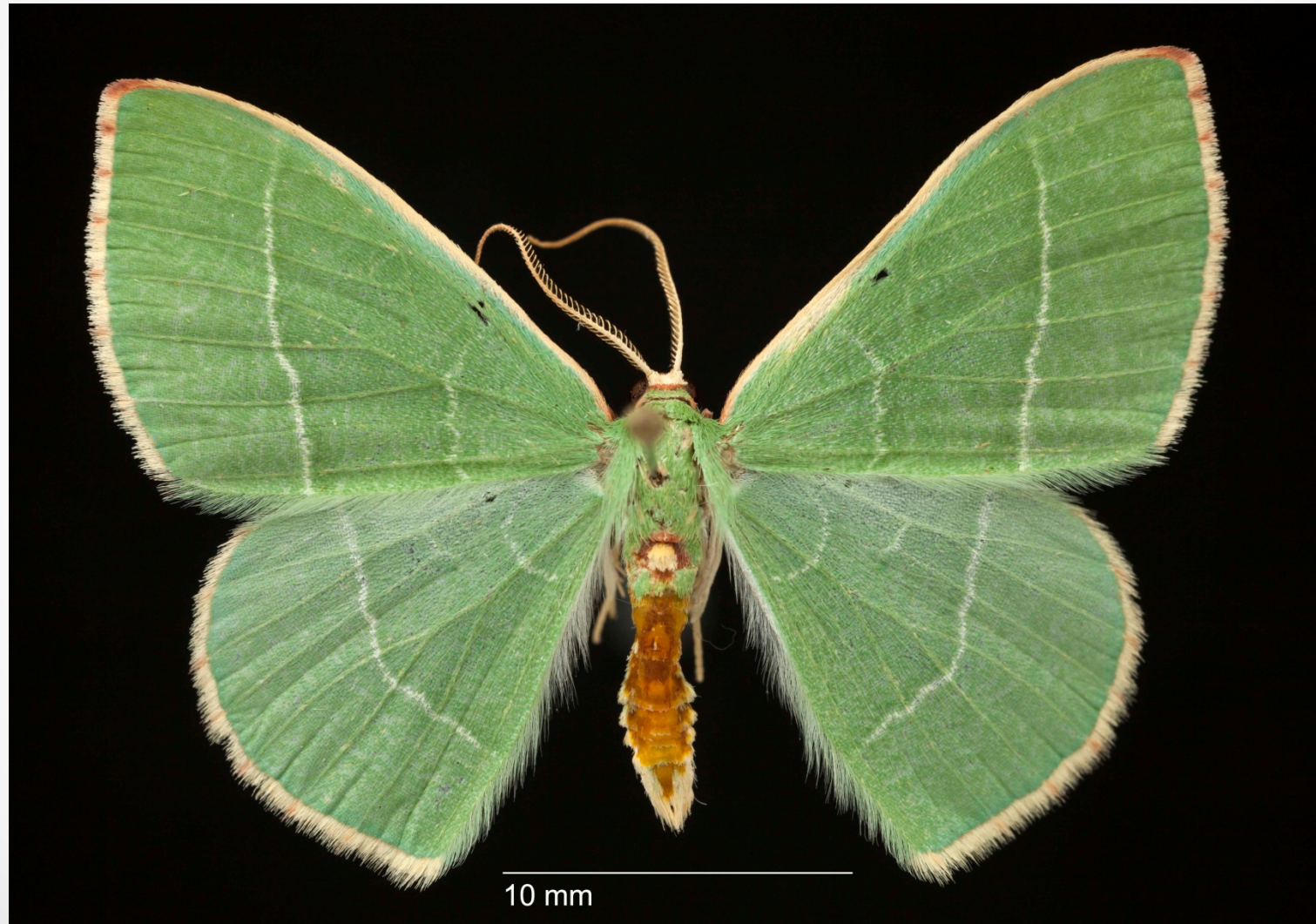
- Image Manipulation

- Photoshop has the **spot-healing brush** tool (J), which works like magic!
- Clone-stamp (S) is great for cloning scales over holes/brushed areas
- Erasing the background makes for a floating image



Post-Processing

- Pin holes...



Post-Processing

- Vanish!



Post-Processing

- Or even more severe repairs



Digrammia gilletteata

Post-Processing

- Or even more severe repairs



Digrammia gilletteata